

## MOKUAWEOWEO'S BRINK

(Continued from First Page.)

Instead of warmth and comfort he found ice and snow to an unknown depth, and so he decided to try the hard floor of lava in the tent, with the rest of the party. The storm had abated somewhat during the time we were arranging our camp, and by 5 p. m. the whole of the great crater was comparatively clear, and we were able to study the action of the tremendous forces at work before and beneath us.

The central portion of Mokuaweoweo appeared to the writer to be an irregular four-sided figure, with an approximate length of about two miles from northeast to southwest, and a width somewhat less than that. At the northern gap of the main crater there are what might popularly be called annexes, or small craters, connected with the larger one, and at the southern end another similar annex, the extent of which could hardly be determined from our location. These annexes at the extreme ends of the main crater were very much less in depth than the larger one, and extended in a northeasterly and southwesterly direction, the same as that of the longer axis of the central portion.

We were encamped on the eastern side of the main crater, directly opposite and facing the western wall of Mokuaweoweo, which is the highest of all the inclosing precipices, and the top of which is the true summit of Mauna Loa, at an elevation of 13,675 feet above sea level.

## Heights and Distances.

Heights and distances are always deceptive to the untrained eye at such elevations, and in extremely rarified air, but the western wall seemed to the writer to be not more than 650 or 700 feet high, judging from its appearance as compared with the 500-foot pali of Uekahuna, on the western wall of Kilauea. The eastern wall upon whose verge we stood is considerably less in height, and is broken into two distinct portions by an extensive plateau, or shelf, about 400 feet below the upper edge. This second shelf is several hundred feet in width, and extends along the whole southwestern side of the main crater, and around to the extreme south end of it, to the gap which connects with the southern annex. At the northern end, the first or lower terrace is very low, perhaps not more than forty or fifty feet above the main floor, and above that is another of considerable greater height, and then the main wall reaching to the summit. Along the western, southern and southeastern walls, there were no possible means of reaching the floor of the crater, as they are all perpendicular cliffs in their upper portions, and nearly so all the way down.

At the northwestern end it appeared that there might be found a way of descent for a good climber to get to the pahoehoe floor at the bottom, but that would involve a very long and laborious descent over a rough trail several miles in length, and none of our party cared to make the attempt. If the descent were possible for any one, the view obtained from the floor of the crater could not have been as satisfactory as that from the upper wall, as the visitor would have been below the level of the lava lake, and looking upward across a vast extent of broken area. From an elevation of five or six hundred feet above the lake one gets a birdseye view of the whole scene and takes in the whole in one general outline, and is also saved the extreme fatigue necessary to reach the lower levels.

## Description of the Crater.

As we found Mokuaweoweo on the 29th of April, the main floor of the crater was a vast plain of smooth pahoehoe, probably not very old in formation, but the result of an overflow previous to the present flow. Small jets of steam were visible at long intervals, but no great evidence of much heat near the surface. The snow vanished before it reached this lower floor, which fact some of the party claimed as evidence that the pahoehoe was of very recent origin, but to my mind the melting was caused by the heat radiating from the active lake and fountains.

At the southern end of the crater and somewhat nearer the western than the eastern wall, was the great active lake of Mokuaweoweo, from which the present eruption proceeds. Here again one must confess to an unwillingness to make estimates of length, breadth and heights, under such conditions as are found in a crater of such vast extent. But in all my estimates of the present eruption I have endeavored to be on the safe side, and not to overdraw the picture.

Taking the western wall at a height of 750 feet as a basis for all the others, I do not hesitate to put the length of the lake of liquid fire at about 1400 or 1600 feet in a northerly and southerly direction, and its width at about two-thirds of its length, but that is more a subject of doubt, as we were looking across the lake from east to west. With the width of the main crater at one and three-quarter miles, as given by J. M. Alexander from his survey of 1885, the center of the lake at the fountain must have been about one mile from the point of view, or a little west of the center of the crater. This lake is at the top of a very flat cone, formed by its own overflows, and is constantly rising in the same way as the lake of Halemaumau, in Kilauea, did previous to its breakdown in March, 1891, and July, 1894.

Overflows from all sides of the lake extend hundreds of feet in every direction, and at all times during our stay, and in that way from one-third to one-half of the old pahoehoe floor has already been covered with new and fresh deposits of lava, which from our position seemed to be of the aa variety. The largest flow at the time of our visit was in a southerly direction, and it promised to fill a vast pit at that end of the crater, which pit I think was left at the time the last eruption ceased.

There was probably a liquid lake of lava on the location shown by Lydgate,

in his survey of 1874, and the smoking cone seen by Alexander in 1885, and later visitors in 1893.

## Immense Lava Fountains.

The crowning features of the present eruption are the two twin fire fountains in the middle of the lake, and approximately 400 feet apart. Probably no grander sight has ever been seen under such favorable conditions as we had a few nights ago, as we stood on the edge of Mokuaweoweo. At a distance of about one mile, and only a few hundred feet below us, these two fountains were in constant eruption, spouting their thousands of tons of lava high in air, and lighting the whole crater, and the heavens above, with their brilliancy. Using the same scale as before, I would estimate the average height of the spouting columns of lava at about 200 feet, but at intervals of a few minutes the upper jets of red-hot bombs would reach half the height of the western wall, and then fall back into the seething lake. At times during a lull in the prevailing easterly wind the loud roar and the boom of the fountains could be heard distinctly by all of our party. (Right here I must confess to a lack of appreciation of that acuteness of hearing of the Hilo gentleman who heard the sullen roar of

season, and our friends in Hilo and Kau had had their misgivings about the success of our undertaking.

The return was made much more rapidly than the ascent, as the animals needed no urging, and the trail was much easier going down. A heavy rain began soon after leaving the summit, and for three or four hours we rode through it, reaching our first night's camp about noon, Aihape at 2:30, where we lunched and changed our tired and hungry horses for the fresh ones to take us over the last stage of fourteen miles to the hotel.

At 6 p. m. of the third day we were all comfortably settled at the Volcano House and congratulating ourselves on our safe return. Here we learned for the first time that Dr. Friedlander had made the ascent a few days before from the Kona side, and returned on the morning we started.

The members of the party have nothing but words of praise for the way the expedition was conducted by Julian Monsarrat, and for the faithful service rendered by all the men under him.

We left the Volcano House the next morning for Hilo, leaving Mr. Logan of the Bulletin there, suffering from a "local" condition only to be cured by time. The member from Buffalo has

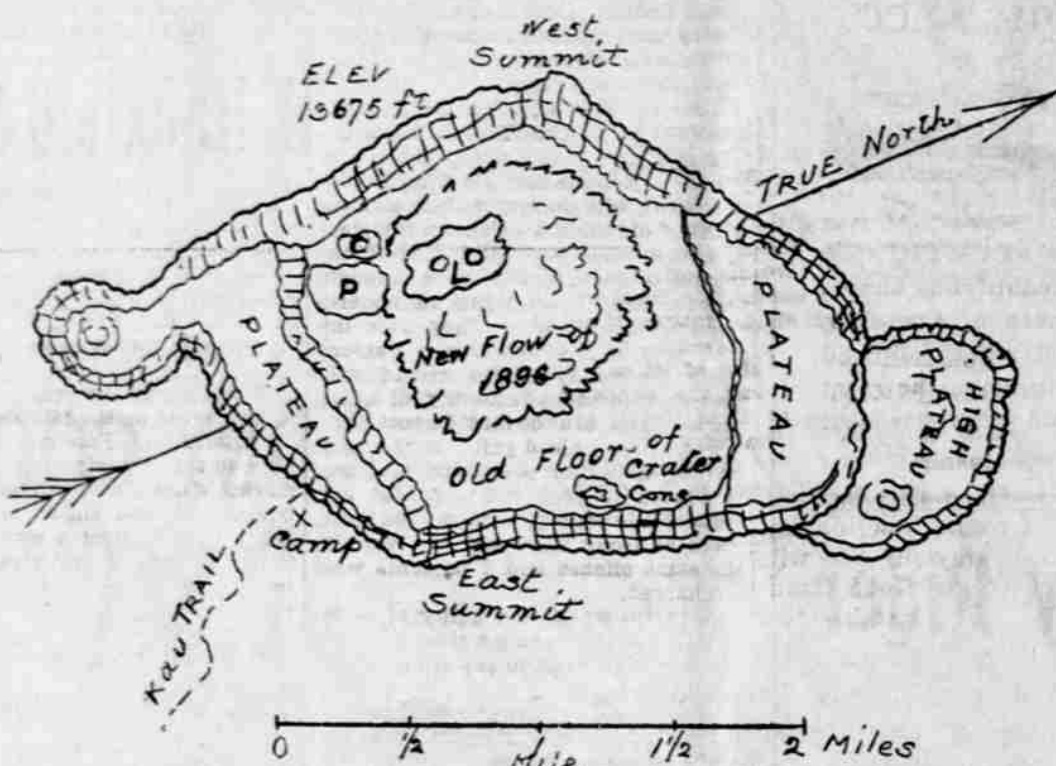
length, after which the whole matter, including various motions and suggestions that had been made, was referred to a special committee to report in two weeks.

## PLAGUE IN HONGKONG.

Action of the Board of Health Meeting Wednesday.

The Board met at 3 p. m. and when the minutes were being read President Smith called attention to some correspondence received from Dr. Akana in relation to a charge of malpractice. The doctor asked that he be allowed to produce evidence to rebut that introduced, and on vote his petition was granted and he will be heard at the next meeting.

A report from Dr. Stuart Eldredge, medical inspector at Yokohama, was read and favorably commented upon for its completeness of detail. It contained the announcement of the appointment by him of deputies at other



The above sketch map is from a survey made by Rev. J. M. Alexander, October, 1895, with additions in April, 1896, by Frank S. Dodge, from personal observation.

The inner figure L represents the present active lake in Mokuaweoweo, which is approximately 1000 x 1600 feet in area. It contains the two great lava fountains, in constant action, throwing up lava in a steady column at least two hundred and fifty feet in height. Surrounding this is the last great flow from the lake itself, now covering nearly a square mile of the old floor of the crater.

C is what remains of an old cone of 1885-90, the eastern part having been swallowed up in the sinking of the deep pit P (date unknown).

X shows the location of the exploring party three-quarter mile from the eastern summit, and right on the edge of the crater. Directly opposite the camp, and above the lake, is the true summit of Mauna Loa—13,675 feet above the sea level, and about 750 feet higher than the lake.

At either end of the main crater are the two elevated plateaus, connecting with the north and south annexes, each of which contains pit craters of unknown depth.

The old floor of the main crater is of smooth pahoehoe, nearly level over the greater part of its area, but now being rapidly covered by the present overflow of aa and pahoehoe from the new lake.

The walls of Mokuaweoweo are very precipitous on all sides, being highest on the west and east of the main crater, and lowest at the northern end, where a trail can be made over the two terraces or plateaus to the lower floor.

Mokuaweoweo from the Volcano House at Kilauea, twenty-two miles away.)

Besides the two large fountains which played without cessation, there were frequent outbreaks of smaller ones in different parts of the lake, and these, with the overflow at the outer edge, furnished a constantly changing scene. Then there were occasional whirlwinds starting in close proximity to one of the large fountains and traveling outwardly toward the circumference, whirling straight columns of smoke hundreds of feet above the cliffs, and often lifting great slabs of the crust of lava high in the air and then casting them off. Here we may find a good explanation of the formation of Pele's hair, one of the forms of lava found at great distances from its source.

It would take an artist's eye and pen to describe the coloring as we saw it at this great exhibition, and I hope our artist companion succeeded in his work upon the mountain.

## Unsurpassed Grandeur.

The effect at night was grand beyond description, and but for the prevailing mountain sickness, the storm of sleet and snow, and other discomforts from which most of us suffered, we should have spent the night out of doors viewing the ever changing scene. As it was, we early sought the shelter of the tent and our heavy double blankets, and tried in vain to be comfortable. Some were deathly sick and cared not for the cold, the storm nor the hardness of the rock which answered for bed and pillow, and longed only for the coming of the morning when we should start for the downward trip. We tried to sleep through the night, eleven of us, packed in a small tent so closely that we could hardly turn over for a change, but while some of us succeeded in getting a little rest, the others failed in the attempt, and were glad to welcome the first glow of morning.

The temperature had fallen to 25 deg. soon after dark, and during the night it reached 22 deg., not very severe to one used to it, but with the mist and sleet and the driving east wind, it was an uncomfortable night for the whole of the party.

The natives were all sick, and our best friend, Julian, had all the responsibility of caring for the twenty-five suffering animals. The mule from Puna, more bold than the others, chewed off his own rope and then wandered all over the camp, eating up such morsels as bridles, halters and saddle girths, until securely tied up again.

## Glad to Break Camp.

Soon after daybreak the camp was astir and preparations were made for an early breakfast, as we had a forty-mile ride to Aihape and the Volcano House, which we were to make before sundown. The air was much clearer than on the previous evening, and we had a fine view of Mauna Kea, with its summit and upper slopes well covered with snow, and all around and below us were dense banks of clouds which hung on the lower flanks of Mauna Loa.

As we afterwards learned, the storm had been the most severe one of the

suggested pneumatic saddles for future mountaineers.

The last night we saw the reflection from the crater it was more extensive than before, and the lake had evidently enlarged its area and was in a state of great activity.

Reports from the Volcano House, dated Sunday evening, May 3d, say that the reflection from the fire fountains of Mokuaweoweo are brighter than ever, and that there is every prospect of the eruption continuing for some time longer.

Monday noon four of the mountain party left Hilo on the chartered Hawaii to connect at Paauhau with the Like-like, bound for Honolulu direct. At Hakalau we picked up two more passengers bound for the capital, and off the Hamakua coast, we were transferred to the Likelike and started at once, spent the night at Mahukona, loaded cattle at Kawaihāi in the early morning, and then sailed for home.

Our last view of the eruption was obtained from Kawaihāi just before sunrise, when there was a faint glow over the summit and a thin column of smoke rising straight in the air. Soon after sunrise all signs of activity had disappeared in the haze which hung over the whole of Hawaii, and as we sailed toward Maui the island was lost to view.

Predictions as to what will happen on Mauna Loa, either in Mokuaweoweo or in Kilauea, are not to be safely indulged in, for the reason that no one knows enough of volcanic action to give him the necessary data.

For two full weeks the great crater has been more active than for many years past, and from the record of past eruptions we may perhaps expect an outbreak on the sides of Mauna Loa within a few weeks, or the fires may disappear altogether from the summit crater. Most of the great eruptions of the present century from the flanks of Mauna Loa have been preceded by action in Mokuaweoweo, and from this fact I should not be greatly surprised at news of an outbreak along the great line of fissure on the northeastern side of the mountain, or at the opposite extremity, from which the 1887 flow proceeded towards Kau.

In Kilauea there has been no visible fire for several months, but a vast volume of smoke and gas is continually escaping, and there is considerable heat just below the surface all about Halemaumau. The smoke and steam in the great pit, the rumbling noises heard in the neighborhood, and the many evidences of great heat, all point to the probability of an early return to a state of great activity in Kilauea.

The year 1896 promises to be an important one in the annals of Hawaii as a great center of volcanic action.

FRANK S. DODGE.

May 5th, 1896.

## Central Union Hymn Books.

At a special business meeting of the Central Union Church, held at the close of the regular devotional meeting last evening, the subject of a new hymn book for the use of the church was introduced and discussed at considerable

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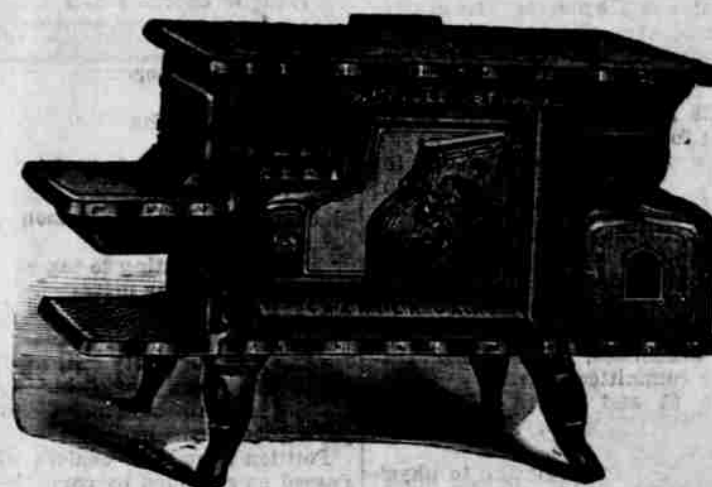


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